Task 1

Step 1 : Create directory and make a file named network_sniffer with py extension

```
C:\Windows\system32>cd NetworkSNiffer
The system cannot find the path specified.

C:\Windows\system32>mkdir NetworkSNiffer

C:\Windows\system32>rmdir NetworkSNiffer

C:\Windows\system32>mkdir NetworkSniffer

C:\Windows\system32>cd NetworkSniffer

C:\Windows\System32\NetworkSniffer>notepad network_sniffer.py
```

Step 2 : In notepad write the following code

from scapy.all import sniff, IP, TCP, UDP, ICMP

import datetime

log_file = open("packet_log.txt", "w")

header = "=== Network Packet Sniffer Started ===\n"

header += f"Capture Start Time: {datetime.datetime.now()}\n\n"

print(header)

log_file.write(header)

def process_packet(packet):

   log_entry = ""

   log_entry += f"\n[+] Packet captured at {datetime.datetime.now()}\n"

```python
    if IP in packet:
        ip_src = packet[IP].src
        ip_dst = packet[IP].dst
        proto = packet[IP].proto
        log_entry += f"IP: {ip_src} -> {ip_dst}\n"

        if TCP in packet:
            log_entry += f"Protocol: TCP | Src Port: {packet[TCP].sport} | Dst Port: {packet[TCP].dport}\n"
        elif UDP in packet:
            log_entry += f"Protocol: UDP | Src Port: {packet[UDP].sport} | Dst Port: {packet[UDP].dport}\n"
        elif ICMP in packet:
            log_entry += f"Protocol: ICMP\n"
        else:
            log_entry += f"Other protocol (Number: {proto})\n"

    else:
        log_entry += "Non-IP Packet Captured\n"

    print(log_entry)
    log_file.write(log_entry)

try:
    sniff(prn=process_packet, store=False)
except KeyboardInterrupt:
    print("\nSniffing stopped by user.")
    log_file.write("\n=== Sniffing stopped ===\n")
    log_file.close()
```

Step 3 : Run the network_sniffer.py file , it will start sniffing the packets

```
=== Network Packet Sniffer Started ===
Capture Start Time: 2025-06-13 13:01:00.065104


[+] Packet captured at 2025-06-13 13:01:00.108340
Non-IP Packet Captured


[+] Packet captured at 2025-06-13 13:01:00.141741
Non-IP Packet Captured


[+] Packet captured at 2025-06-13 13:01:00.143764
Non-IP Packet Captured


[+] Packet captured at 2025-06-13 13:01:00.175206
Non-IP Packet Captured


[+] Packet captured at 2025-06-13 13:01:00.180430
Non-IP Packet Captured
```

```
[+] Packet captured at 2025-06-13 13:01:01.075196
IP: 172.20.10.3 -> 172.20.10.1
Protocol: UDP | Src Port: 49164 | Dst Port: 53


[+] Packet captured at 2025-06-13 13:01:01.081592
IP: 172.20.10.3 -> 172.20.10.1
Protocol: UDP | Src Port: 63008 | Dst Port: 53


[+] Packet captured at 2025-06-13 13:01:01.085950
IP: 172.20.10.3 -> 172.20.10.1
Protocol: UDP | Src Port: 59665 | Dst Port: 53


[+] Packet captured at 2025-06-13 13:01:01.088354
IP: 172.20.10.1 -> 172.20.10.3
Protocol: UDP | Src Port: 53 | Dst Port: 49164


[+] Packet captured at 2025-06-13 13:01:01.118398
Non-IP Packet Captured
```

```
[+] Packet captured at 2025-06-13 13:01:01.118398
Non-IP Packet Captured


[+] Packet captured at 2025-06-13 13:01:01.145209
Non-IP Packet Captured


[+] Packet captured at 2025-06-13 13:01:01.147706
IP: 172.20.10.1 -> 172.20.10.3
Protocol: UDP | Src Port: 53 | Dst Port: 63008


[+] Packet captured at 2025-06-13 13:01:01.155734
IP: 172.20.10.1 -> 172.20.10.3
Protocol: UDP | Src Port: 53 | Dst Port: 59665


[+] Packet captured at 2025-06-13 13:01:01.158879
Non-IP Packet Captured


[+] Packet captured at 2025-06-13 13:01:01.175188
Non-IP Packet Captured
```